

Application No. Not yet assigned

Amendments to the Specification:

Please replace paragraph [0003] with the following amended paragraph:

[0003] According to a first aspect of the present invention, there is provided a speaker system which transmits sound to a listening area by reflection, the speaker system including at least one speaker enclosure comprising an enclosure housing at least one ~~speaker~~ electro-acoustic transducer supported on said housing and a ~~device~~ reflective horn for reflecting sound from said transducer into the listening area, said at least one transducer facing in use away from said listening area and said reflective horn having a rear reflecting panel opposite said transducer, an opening through which sound reflected from said transducer exits said reflective horn and a top reflecting panel defining a boundary of said openings, said top reflecting panel extending at 50° to 150° from said rear reflecting panel.

Please delete paragraph [0004]

Please replace paragraph [0005] with the following amended paragraph:

[0005] Preferably, the at least one ~~transducer~~ speaker enclosure includes an electro-acoustic dynamic moving coil bass transducer and a compression driver transducer.

Please replace paragraph [0007] with the following amended paragraph:

[0007] ~~Preferably, the device comprises a reflective horn..~~ Preferably, the ~~reflective horn includes a rear reflecting panel facing~~ faces the at least one ~~speaker transducer~~ at an angle. ~~This angle is referred to as the "toe-in" angle.~~ Preferably, the toe-in angle is 20° to 60°. More preferably, approximately 40°. ~~Alternatively, the rear reflecting panel directly faces the at least one speaker.~~

Please replace paragraph [0008] with the following amended paragraph:

[0008] Preferably, the at least one ~~speaker~~ transducer is tilted relative to the rear reflecting panel at an angle. This angle is referred to as the tilt angle. Preferably, the tilt angle is 0° to 60° from vertical. Preferably, the tilt angle is dependent on the location of the at least one ~~speaker~~ transducer relative to the floor. Preferably, the at least one ~~speaker~~ transducer is inclined so as to direct sound to a listener in the listening area. Preferably, when the at least one ~~speaker~~ transducer is at a height of 1m to 1.5m above the floor, the tilt angle is 0° . Preferably, the tilt angle increases when the at least one speaker is above 1.5m or below 1m. Preferably, when the at least one speaker enclosure rests on the floor, the tilt angle is approximately 30° . Preferably, when the at least one speaker is located approximately 3cm above floor level, the tilt angle is approximately 30° .

Please replace paragraph [0009] with the following amended paragraph:

[0009] Preferably, the rear reflecting panel is substantially vertical. The rear reflecting panel may be formed by a wall. Preferably, the reflective horn also includes a baffle panel. Preferably, the baffle panel also forms one of the walls of the enclosure housing. Preferably, the at least one transducer of the at least one speaker enclosure is located on the baffle panel. Preferably, the rear reflective panel faces the baffle panel at the toe-in angle. Preferably, the baffle panel is ~~inclined~~ tilted to the rear reflective panel at the tilt angle. ~~Preferably, the reflective horn also includes a top reflecting panel. The preferably top reflecting panel, in use, acts to prevent the substantial loss of sound from the top of the at least one speaker enclosure. Preferably, the top reflecting panel is connected to the rear reflecting panel at 50° to 150° . More preferably, the top reflecting panel is substantially horizontal. The top reflecting panel may be formed by a ceiling.~~

Please replace paragraph [0010] with the following amended paragraph:

[0010] Preferably, the reflective horn also includes a bottom reflecting panel. The preferably bottom reflecting panel, in use, acts to prevent the substantial loss of sound from the bottom of the at least one speaker enclosure. Preferably, the bottom reflecting panel is connected to the rear reflecting panel at 50° to 150° . More preferably, the bottom reflecting panel is substantially horizontal. Preferably, the bottom reflecting

panel is substantially horizontal if the at least one speaker enclosure is adapted, in use, to rest on the floor. The bottom reflecting panel may be formed by a floor. Preferably, a substantial portion of the sound generated by the at least one ~~speaker~~ speaker transducer exits the reflective horn from one side of the at least one speaker enclosure.

Please replace paragraph [0011] with the following amended paragraph:

[0011] Preferably, the reflective horn also includes a side reflecting panel. ~~The preferably side reflecting panel, in use, acts to prevent the substantial loss of sound from the other side of the at least one speaker enclosure.~~ The side reflecting panel may be formed by a wall. Alternatively, the speaker enclosure includes two side reflecting panels. In this case, the top reflecting panel is above the top of the enclosure, leaving a space for a substantial portion of sound to exit the reflective horn opening. Preferably, ~~the speaker faces away from the listening area. Alternatively, the speaker faces the listening area. In this case, the sound is reflected at least twice by the device before entering the listening area.~~

Please replace paragraph [0012] with the following amended paragraph:

[0012] Preferably, the speaker enclosure and reflective horn ~~is~~ are constructed of timber, plastic or metal or any other suitable reflective material. The panels of the reflective horn may be curved or shaped in various ways for either acoustic or ornamental purposes. The at least one speaker enclosure may be in the form of a floor standing speaker enclosure, a floor standing tower speaker enclosure, a wall mounted speaker enclosure, an inverted ceiling mounted speaker enclosure, a twin speaker enclosure, a stage monitor speaker enclosure, or a spherical speaker enclosure. The speaker system may, for example, comprise two speaker enclosures; a right-channel speaker enclosure and a left-channel speaker enclosure. Preferably, the right and left channel speaker enclosures are separated by a distance of 1m to 10 m. Preferably, the left and right channel speaker enclosures are arranged, in use, to direct sound through the space between them.

Please replace paragraph [0013] with the following amended paragraph:

[0013] According to a second aspect of the present invention, there is provided a ~~speaker enclosure as defined by the first aspect~~ a speaker system which transmits sound to a listening area by reflection, the speaker system including at least one speaker enclosure comprising an enclosure housing, a baffle panel, at least one electro-acoustic transducer supported on said baffle panel and a reflective horn for reflecting and directing sound from said transducer into the listening area, said baffle panel facing in use in a rearward direction relative to said listening area such that said at least one transducer is directed away from said listening area and said reflective horn having a planar or concave reflecting surface opposite said baffle panel and an opening through which sound from said transducer reflected from said reflecting surface exits said reflective horn in use towards said listening area. Preferably the planar reflecting surface is defined by a planar rear reflecting panel opposite said baffle panel and arranged at an acute angle to said baffle panel. Preferably the reflective horn includes top and bottom panels extending between the baffle panel and the rear reflecting panel and define boundaries of the opening. The baffle panel is suitably tilted away from the rear reflecting panel. Suitably the reflective horn includes a further reflecting panel extending from the rear reflecting panel and defining a boundary of the opening. Most preferably the reflective horn includes opposite side panels defining further boundaries of the opening. The side panels suitably define sides of the housing and the reflective horn. Preferably, the speaker enclosure includes a front panel defining the front of the housing. The speaker enclosure suitably also includes a top reflecting panel defining a top reflecting panel of the horn, the top reflecting panel extending from the rear reflecting panel and defining an upper boundary of the opening. Suitably the top reflecting panel extends at 50° to 150° from the rear reflecting panel. The enclosure housing suitably includes a top panel extending from the front panel, the top panel defining a lower boundary of the opening. Preferably, the baffle panel extends from the top panel.

Please add the following new paragraph after paragraph [0013]

[0013.1] In another preferred form, the concave reflecting surface comprises a concave panel. The concave panel may be defined by the wall of a part spherical shell. The part spherical shell may further define the horn and enclosure housing. The enclosure housing is suitably defined between a baffle panel extending radially of the

shell and a top enclosure housing panel. The top enclosure housing panel may extend radially of the shell. The opening is suitably defined between a curved wall of the shell and the top panel.

Please replace paragraph [0016] with the following amended paragraph:

[0016] Referring firstly to Fig. 1, a speaker system 10 is shown including two speaker enclosures 11, a right channel speaker enclosure and a left-channel speaker enclosure. The speaker system 10 of the present invention is not limited to the number or arrangement of speakers. The speaker enclosures 11 shown in Fig. 40 1, are floor standing speakers, such that they rest on the floor 30. The speaker enclosures 11 may or may not lie up against a wall 31 as shown. The separation distance between the closest points of the two speaker enclosures 11 is at least one half a metre and preferably between 1 and 10 metres.

Please replace paragraph [0017] with the following amended paragraph:

[0017] The speaker system 10 is adapted, in use, to provide a listener with sound which is entirely reflected. Without wishing to be bound by theory, the effect of reflecting the sound is that all frequencies bass to treble are blended to ~~propagate~~ transmit coherent dynamic sound, such that no frequency band overwhelms another.

Please replace paragraph [0018] with the following amended paragraph:

[0018] The Fletcher hertz decibel graph of human hearing responsiveness at low sound pressure levels shows that mid-range frequencies are relatively linear when compared to bass and treble frequencies, which are rolled-off or heard at a lower sound pressure level and thus require boosting to be linear with mid-range sound pressure levels. The speaker system 10 propagates soundwaves at substantially linear sound pressure levels.

Please replace paragraph [0019] with the following amended paragraph:

[0019] As a result, the listener receives an increased density of sound across a wider central sound stage, at high and low sound pressure levels. Thus, using the speaker system 10 of the present invention, the listener is able to clearly hear dynamic ~~upper~~ bass frequencies as low as 70 to 80 decibels, and at a listening position as close as one metre to the speaker system 10. Furthermore, the quality of sound is improved by dispersing the ~~sound~~ soundwaves away from the room walls, floor and ceiling.

Please replace paragraph [0020] with the following amended paragraph:

[0020] The speaker system 10 can be driven by an analogue or digital format from ~~left and right~~ an output or outputs or by a multi-channel processor outputs using conventional reproduction equipment for either indoor or outdoor purposes.

Please replace paragraph [0022] with the following amended paragraph:

[0022] Each speaker enclosure 11 comprises an enclosure 12 and a reflective horn 13. The enclosure 12 houses a ~~speaker or speakers~~ transducer or transducers including conventional electronic equipment for reproducing sound, including at least one transducer for the conversion of electrical energy to acoustic energy. Any conventional transducers can be used, however, a ~~higher~~ better quality of sound is produced when an electro-acoustic dynamic moving coil bass transducer and a compression driver transducer for middle and high frequencies are used. The diameter of the bass driver is approximately 38cm.

Please replace paragraph [0023] with the following amended paragraph:

[0023] The reflective horn 13 ~~propagates~~ converges, reflects and transmits the soundwaves from the ~~speaker~~ transducer/s to the listener. The effect of the reflective horn 13 is to increase the dynamic range and enhance the sound of percussive musical instruments such as a piano, drums, and ~~symbols~~ cymbals. ~~for stereo and multi-channel transient sound effects.~~

Please replace paragraph [0024] with the following amended paragraph:

[0024] Within the reflective horn 13, the sound pressure level is higher than the sound pressure level at the ~~exit point for the sound from the~~ horn 13 mouth. This concentrated higher sound pressure level within the reflective horn 13, generates higher dynamic range and increases bass frequency sound pressure levels in the listening area. Bass frequencies tend to be omnidirectional and the reflective horn 13 concentrates the transmission of bass frequencies with comparatively narrow dispersion of approximately 75° and more directly concentrated sound to listeners. The sound is therefore transmitted away from the room walls, floor and ceiling and this substantially overcomes the problems of bass standing waves within the listening area. Also, due to the horn internal reflection of middle and high frequencies, these frequencies do not overwhelm the bass frequency resolution, and therefore what is heard by the listener is ~~high~~ higher fidelity resolution of sound ~~which has a sense of natural weight propagated by the deep, dynamic, defined bass.~~

Please replace paragraph [0025] with the following amended paragraph:

[0025] Each speaker enclosure 11 is arranged, in use, so that the speaker transducer/s is/are facing the wall 31 (~~away from the listening area~~) ~~and is separated from the wall by the reflective horn 13.~~ The enclosure 12 is attached to the reflective horn 13 ~~and projects away from the wall 31.~~ The reflective horn 13 has an opening 22 to one side which is the exit point mouth for the sound from the reflective horn 13 and allows the sound to be transmitted out to the listener in the listening area.

Please replace paragraph [0026] with the following amended paragraph:

[0026] Referring now to Figs. 2 to 7, the reflective horn 13 of each speaker enclosure 11, comprises a baffle panel 14, a rear reflecting panel 15, a top reflecting panel 16, a bottom reflecting panel 17 and a side reflecting panel 18. The baffle panel 14 includes the at least one transducer ~~of the speaker~~ and also forms one wall of the enclosure 12. The baffle panel 14 is facing the rear reflecting panel 15 and is located relative to the rear reflecting panel 15 so that the at least one transducer of the speaker is approximately 10cm to 30cm from the rear reflecting panel 15. The baffle panel 14 faces

the rear reflecting panel 15 at an angle. The angle between the baffle panel 14 and the rear reflecting panel 15 is referred to as the "toe-in angle", and is between 20° and 60°. However, the best sound is usually produced when the toe in angle is approximately 40°.

Please replace paragraph [0027] with the following amended paragraph:

[0027] The rear reflecting panel 15 is substantially vertical. The baffle panel 14 is inclined away from the rear reflecting panel 15 at an angle referred to as the "tilt angle" 21. The tilt angle 21 of the baffle panel 14 can be between 0° to 60°. Although the tilt angle 21 can be greater than 60°, the acoustic quality at higher tilt angles 21 is significantly reduced. However, with the speaker 11 located on the floor 30, it is preferable that the tilt angle 21 is 30°. The baffle panel 14 is inclined so that the sound is reflected towards the ears of the listener with minimum reflection back to the transducer/s diaphragm. Therefore, generally as the position of the ~~speaker~~ transducer/s above the ~~ground~~ floor is increased, the tilt angle 21 required reduces, up to a height of 1m to 1.5m, where the tilt angle 21 should be 0°. Above 1m to 1.5m, the tilt angle 21 ~~required~~ is increased ~~so that~~ and the baffle panel 14 is ~~inclined~~ tilted so as to reflect sound downwards to the ~~listener~~ listening area.

Please replace paragraph [0028] with the following amended paragraph:

[0028] The top reflective panel 16 is connected to the tops of the baffle panel 14 and the rear reflecting panel 15. The angle at which the top reflecting panel 16 is connected to the rear reflecting panel 15 can vary between 50° and 150°. However, it is best if the top reflecting panel 16 is substantially horizontal to substantially avoid loss of sound to the room ceiling soundwave reflections.

Please replace paragraph [0029] with the following amended paragraph:

[0029] With the speaker 11 resting on the ~~ground~~ floor, the bottom reflecting panel 17 is substantially horizontal. With the speaker 11 arranged in this way, the floor 30 may act as the bottom reflecting panel 17. Furthermore, if the speaker 11 is ~~up~~ against the wall 31, the wall 31 may act as the rear reflecting panel 15.

Please replace paragraph [0030] with the following amended paragraph:

[0030] Sound leaves the speaker enclosure 11 through the ~~opening open mouth~~ 22 in the reflective horn 13 which is to one side of the baffle panel 14. For the right channel speaker enclosure 11 shown in Figs. 2 to 7, the ~~opening open mouth~~ in the reflective horn 13 is on the left-hand side of the baffle panel 14 when facing the wall. For a left channel speaker enclosure 11, the ~~opening open mouth~~ 22 would be on the right-hand side. On the other side of the baffle panel 14 to the ~~opening open mouth~~ 22, there is the side reflecting panel 18, which acts to prevent sound escaping from ~~the wrong~~ that side of the reflective horn 13.

Please replace paragraph [0031] with the following amended paragraph:

[0031] Referring now to Fig. 8, an alternative embodiment of the speaker enclosure of Fig. 1 is shown with the corresponding features being designated with the same numbers but including the prefix numeral 2. The speaker ~~211~~ enclosure 211 shown in Fig. 8 is a floor standing tower speaker enclosure, comprising an enclosure 212 and a reflective horn 213. The speaker 211 rests on the floor 230 and is arranged in Fig. 8 ~~up~~ against the wall 231, with the ~~speaker~~ transducer/s facing the wall 231.

Please replace paragraph [0032] with the following amended paragraph:

[0032] The ~~speaker~~ transducer/s is/are located in the upper portion of the speaker enclosure 211, at a height of approximately 1m to 1.5m. At this height, the tilt angle is 0° and therefore there is no requirement for a side reflecting panel as part of the reflective horn 213. The reflective horn 213 therefore comprises a baffle panel 214, a rear reflecting panel 215, a top reflecting panel 216 and a bottom reflecting panel 217. The rear reflecting panel 215 and the baffle panel 214 are arranged, in use, substantially vertically. The top reflecting panel 216 and the bottom reflecting panel 217 can be angled to the rear reflecting panel 215 at an angle of between 50° and 150°. However, it is best if the top and bottom reflecting panels 216 and 217 are substantially horizontal to avoid ~~loss of sound to~~ reflecting from the floor and ceiling. ~~The bottom reflecting panel 217 is located at least 3cm below the transducer of the floor standing tower speaker 211.~~

The lower portion of the speaker 211 (below the bottom reflecting panel 217), may contain further ~~speakers~~ transducer/s or alternatively may comprise other features such as a ~~ed~~ CD rack, shelves or possibly other electronic equipment.

Please replace paragraph [0034] with the following amended paragraph:

[0034] With the speaker enclosure 311 mounted at this height, the tilt angle 321 is 0°, so that there is no requirement for the reflective horn 313 to include a side reflecting panel. The reflective horn 313 therefore comprises a baffle panel 314, a rear reflecting panel 315, a top reflecting panel 316 and a bottom reflecting panel 317. The rear reflecting panel 315 and the baffle panel 314 are arranged, in use, substantially vertically. The top reflecting panel 316 and the bottom reflecting panel 317 are angled to the rear reflecting panel 315 at an angle of between 50° and 150°. However, it is best if the top and bottom reflecting panels 316 and 317 are substantially horizontal to avoid ~~loss of reflected sound to~~ from the room floor and ceiling.

Please replace paragraph [0038] with the following amended paragraph:

[0038] Referring in particular to Fig. 12, the reflective horn 513, includes a baffle panel 514, a rear reflective panel 515, a top reflecting panel 516, a bottom reflecting panel 517 and side reflecting panel 518. The side of the top reflecting panel 516 which is connected to the top edge of the rear reflecting panel 515, is substantially shorter than the length of the top edge. Thus, the reflecting horn 513 has an opening at the top as well as on one side, thus allowing sound to ~~escape~~ exit from the reflective horn 513 through the top and the side.

Please replace paragraph [0041] with the following amended paragraph:

[0041] Referring now to Figs 28 to 34, an alternative embodiment of the speaker system of Fig. 1 is shown with the corresponding features being designated with the same numbers but including the prefix numeral 10. The speaker system shown in Figs 28 to 34 includes a floor standing speaker enclosure 1011 comprising an enclosure 1012 and a reflective horn 1013. The reflective horn 1013 of the speaker enclosure 1011, includes a baffle panel 1014, a rear reflective panel 1015, a top reflecting panel 1016, a

bottom reflecting panel 1017 and two side reflecting panels 1018a and 1018b. The top reflecting panel 1016 is located above a top plate 1019 of the enclosure 1012. Thus, sound exits the reflective horn 1013 from the front mouth 1022 of the speaker enclosure 1011 through the space between the top reflecting panel 1016 and the plate 1019. The top reflecting panel 1016 is connected to the rear reflecting panel 1015 at an angle of 80°-150°, but preferably approximately 110°. The rear reflecting panel 1015 is substantially vertical in Fig.s 28 to 34. However, the rear reflecting panel ~~4016~~ 1015 can be angled from the vertical to an extent dependent upon the height of the speaker enclosure 1011 relative to the listening area, so that sound can be directed towards the listening area. The side panels 1018a and 1018b are substantially vertical and act in use to prevent sound ~~leaking~~ exiting from the sides of the speaker enclosure 1011. The baffle panel 1014 is angled relative to the rear reflecting panel 1015 by the tilt angle of between 20° and 60° and preferably 30°. The baffle panel 1014 is facing the rear reflecting panel 1015 and is located relative to the rear reflecting panel 1015 so that the at least one transducer of the speaker is approximately 10cm to 30cm from the rear reflecting panel 1015.

Please replace paragraph [0045] with the following amended paragraph:

[0045] For example, Fig.s 58 to 65 show an alternative embodiment of the speaker system of Fig. 1 with the corresponding features being designated with the same numbers but including the prefix numeral 14. The speaker system shown in Fig.s 58 to 65 is a part-spherical speaker enclosure 1411, comprising an enclosure housing 1412 and a reflective horn 1413 defined by a part spherical shell 1451. The reflective horn 1413, is ~~substantially-spherical and~~ instead of having a number of panels, comprises the single spherical shell 1451 with sound exiting an open mouth 1422 facing the listening area, the open mouth 1422 being defined between a curved wall of the shell 1451 and a top panel 1419 which extends radially of the shell 1451 and forms a wall of the enclosure 1412. The spherical shell 1451 is connected to a base plate 1450 so that it can rest easily on ~~the ground~~ a floor, shelf, stand or other suitable support or fixed to a wall or ceiling. Alternatively the spherical shell 1451 could have a flattened bottom portion.